American Society of Biomechanics Newsletter

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www.asb-biomech.org

From the President

Joan E. Bechtold

Greetings to friends in ASB! With the vantage point of a near-record number of abstract submissions for our 2003 meeting in Toledo, and with the selection of an excellent site for our 2004 meeting (you'll have to read on to learn that secret…), and with an innovative Executive Board, an invigorating mid-year board meeting and a resoundingly successful regional meeting at Pepperdine, we have a lot to be proud of.

With meetings being the major activity of ASB, I'll start with that point of pride. On the heels of a highly successful and productive World Congress in Calgary (superbly organized by our President-elect Walter Herzog with Program Chair Jill McNitt Gray), our 2004 meeting is shaping up to be its match. Scientifically the content will undoubtedly be very strong, given the quality of the submitted abstracts, the excellence of the invited speakers and their intriguing topics, and the able stewardship of our Program Chair Rodger Kram. Our intrepid organizers (Danny Pincievero and Vijay Goel) are even pitching Toledo's site against the majesty of the World Congress' Canadian Rockies, in what I don't doubt will be a very strong effort. In fact, Toledo is indeed a very attractive site for our meeting, with its central location within driving distance for many students, its excellent conference facilities and accommodations, and the experience of the organizing committee. On top of that, the social programs and the banquet will be in pleasant surroundings to foster that collegiality for which ASB is so famous. Also, after the meeting you can take in the Toledo Art museum's justifiably famous collection, or golf with (new?) friends, or attend the organized post-meeting activities. Maybe the revered Toledo Mudhens will even be in town. So, forget any preconceptions about Toledo, and come prepared for an excellent and inspiring meeting. The dates are September 25–27, 2003, and there is more information in this newsletter and of course on the ASB website.

And, for those of you who are planning ahead, I'm very excited to announce that the 2004 meeting will be held in Portland Oregon, with Michael Bottlang as the Meeting Chair. We were fortunate to have had two outstanding proposals to choose from, and the decision for 2004 was very difficult. Michael is starting his preparations early with his local organizing committee, and he will be working with the very capable and thoughtful Steven Robinovitz as Program-Chair for the 2004 Pacific Northwest meeting. It promises to be an excellent venue and an excellent meeting.

And, continuing our ever-expanding series of successful regional meetings, Michael Feltner can be commended for the 2003 Southern California Conference on Biomechanics held earlier this year. I received unsolicited praise for the content and the organization, with particular note of the value of these meetings to our membership and the biomechanics community at large. The support that ASB provides to these meetings seems to be a very worthwhile use of our funds, and we encourage other sites to consider hosting their own regional meeting (please contact Steve McCaw, Education Chair, for details). Note that Toledo chose to channel its excess energy by hosting its own regional meeting (perhaps as a dry run prior to hosting the ASB annual meeting?) Details are elsewhere in this newsletter.

Our students and our activities supporting students are something we are very proud of, and see as one of our key roles. We plan to continue to place significant resources towards maintaining and expanding our student programs.

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In this issue…

(*From the President continued*)

In addition to the regional meetings, and Grant-in-Aid program, at our board meeting we suggested that we poll the membership regarding an additional $10 in fees (to bring dues to $50), to be used explicitly towards student activities? For example, the money could be used to fund student travel (particularly for travel that would lead to interdisciplinary collaboration, or collaboration in underrepresented disciplines). This would be a small individual contribution for an already low dues structure (that has not been raised in our admittedly aging collective memory), and could significantly increase our student-related activities.

We will add this question to this year's membership ballot. Additionally, we are considering adding a voluntary check-off to the dues statement. Based on your feedback, we will be more specific in describing the intended usage of this money. All comments and suggestions are very welcome, and can be addressed to me or any board member.

Awards are another part of our ASB meetings that give us the opportunity to recognize excellence. Although this year's award nominees are being ably evaluated by the Awards Committee headed by Past-President, Andy Biewener, I would very much encourage you to consider nominating a colleague (or yourself) for 2004 awards. I am sure that in our midst we have a surfeit of excellent work that is in various stages of completion, and excellent people in various stages of their careers.

I'd like to close with a few ideas that came out of our mid-year Executive Board meeting and strategic planning discussions. I would like to thank everyone on our board for contributing their thoughts and ideas. You can be pleased with the breadth and depth and commitment of your board, and I would like to personally thank every member for their contributions of time and talent and humor!

In terms of ASB's strengths and weaknesses, we came to the conclusion that our strengths are in many ways our weaknesses and vice versa. Our small size is what makes us collegial and approachable, but we may be too small to realistically expect a critical mass in all 5 disciplines. For example, our small number of biologists may be simply a reflection of fewer biomechanics scientists trained as biologists than those trained as engineers? We agreed that it is the grouping of our separate disciplines that we feel is a key part of ASB's value and niche.

So, while it is a perennial effort to recruit new members from all disciplines, and thereby to enrich our membership by our diversity, we recognize that we have to have realistic expectations. We have options such as equally highlighting all disciplines within the annual meeting program (symposia, workshops), and through ASB's page allocations in the Journal of Biomechanics. For example, in our symposia and workshops we can pro-actively give prominent representation to biology or exercise science despite fewer members in these categories (colloquially referred to as Rodger Krams' "senator" theory, i.e. that each discipline gets 2 senators regardless of the number of members in that discipline).

Parenthetically, we also discussed that the focus on "biologists" per se may be broad. For example, the smaller, cellular scales are becoming more accessible to study, and considering the role of mechanics in smaller scale biologic functions is a new evolution in biomechanics… perfect for the skills and interests of our broad membership! These topics can be seeded into our program in an effort to foster new productive collaborative opportunities.

Considering that ASB's ability to provide a setting for fostering interdisciplinary collaboration is a key to our niche and value, led to the following discussion…

> Is ASB our members' primary or secondary society? If ASB is your primary (or home) society, that itself shows the value of ASB to your professional life. What if you consider ASB to be your secondary society? In that case, ASB may actually be what helps you to make important and innovative contributions to your home society.
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> In other words, we could make the case that you need ASB in order to be strong in your own specialty. Why? Consider that the true leaps and breakthroughs often occur at the boundaries of traditional fields. And, activities in the boundary regions are more

(*continued on page 3*)

likely to occur when people collaborate outside their own specialization area. So, if you have a home society (e.g. ACSM, SICB, ORS, Neurology), then ASB may indeed be a tremendous asset for you precisely by fostering opportunities for cross-discipline collaborating with versatile scientists already knowledgeable in your field. These opportunities for innovation and exploring outside the boundaries of the traditional fields are likely not as available within your home societies.

So, how can ASB enable this cross-disciplinary collaboration to actually happen? We discussed strategies for two types of collaboration (and mentoring): for students, and for established scientists.

Our Student Representative, Max Kurz, will be working with Steve McCaw and the Education Committee to arrange cross-disciplinary mentoring as part of the student luncheon at our annual meeting. More senior mentors will open the discussion at their tables by answering a list of "canned" questions regarding their own experiences in collaboration. We thought that this structure may help to lead to a more personal and useful discussion. Mentoring about "life" issues as well as "career" issues can be part of this. Please provide Max and Steve ideas or suggestions on meaningful ways this can be organized for the annual meeting (or if you'd like to be a mentor). If this is found to be useful, we also would plan to implement this as an ongoing function for future meetings.

The board realized that students may not be the only ones—or maybe not even the main ones—who could benefit from some help in "match making across disciplines," (and this is where some of our humor comes in to play). One idea was to have a "match making" bulletin board at the conference, or near the bar at the banquet (or later on the ASB web site). For example, a variation on the 3" x 5" note card approach; e.g. "biologist seeking to make contact with engineer with interest in animal locomotion and ability to write in Fortran." We are fortunate nowadays that with electronic communications, location of our collaborators is not a prohibitive barrier. We hope that all members will use their own creativity to take advantage of ASB's diversity to enhance their own network of colleagues. Who knows what new friends you can meet, in new disciplines with new ways of approaching problems and with new tools in their kit bags.

The ASB board is also exploring outreach to likely "sister" societies with potential interest in cross-disciplinary collaboration. For example, we plan to liaison with their boards, and write guest columns in their newsletters, to encourage consideration of ASB as a secondary society, and a source of excellent, productive, groundbreaking collaborations. Any ASB members who would like to serve as contacts with their home societies would be welcome to join in our efforts. Please contact me or any of our board members.

Finally, since I serve also as ASB's representative to the Journal of Biomechanics, I would like comment on subscription issues. Last year, Andy Biewener successfully negotiated a policy that removed the requirement that subscription to the Journal of Biomechanics be mandatory. This was in response to our membership's growing ability to access the Journal through their own institutional libraries. We are fortunate that Elsevier has been flexible enough to allow us to listen to our members. However, I'd suggest that those of you who are relying on their University library should consider contacting their librarian to make sure they know that you use the Journal of Biomechanics. It is difficult for libraries to track the usage of various journals, and you don't want to be in a situation where your library drops the Journal of Biomechanics because it was unaware of its importance to our community.

Throughout all this, and despite issues with lapses in subscriptions (that eventually seem to have been resolved—through no small effort by ASB's Secretary Treasurer, Ted Gross), we continue to enjoy an excellent relationship with Elsevier. Our stalwart liaison, Paul Kidd, has left Elsevier, and we will miss his humor and ability to make things happen. We now have a new Publishing Editor, Sarah Newman, and by the way she is starting out it appears that she'll be extremely responsive, interested, and committed to ensuring ASB's needs are met. We continue to be in good hands.

In closing, I would like to thank you again for being able to be part of ASB. We really are a gaggle of great folks, with a great attitude and great potential.

ASB Executive Board 2002–2003

President
Joan Bechtold
Midwest Orthopaedic Research Foundation
Orthopaedic Biomechanics Lab
914 South 8th Street / 860C
Minneapolis, MN 55404
Phone: (612) 336-6609 Fax: (612) 336-6619
Email: bechto1@attglobal.net

Past-President
Andrew Biewener
Concord Field Station, MCZ
Harvard University
Old Causeway Road
Bedford, MA 01730
Phone: (781) 275-1725, x13 Fax: (781) 275-9613
Email: abiewener@oeb.harvard.edu

President-Elect
Walter Herzog
University of Calgary
Faculty of Kinesiology
2500 University Drive, NW
Calgary, AB T2N 1N4 CANADA
Phone: (403) 220-3438 Fax: (403) 284-3553
Email: walter@kin.ucalgary.ca

Secretary/Treasurer
Ted Gross
University of Washington
Department of Orthopaedics and Sports Medicine
Box 359798 – 325 Ninth Ave.
Seattle, WA 98104-2499
Phone: (206) 341-5604 Fax: (206) 341-5611
Email: tgross@u.washington.edu

Program Chairperson
Rodger Kram
University of Colorado
Department of Kinesiology and Applied Physiology
354 UCB
Boulder, CO 80309-0354
Phone: (303) 492-7984 Fax: (303) 492-4009
Email: rodger.kram@colorado.edu

Program Chairperson-Elect
Steve Robinovitch
Simon Fraser University
School of Kinesiology
8888 University Drive
Burnaby, B.C., V5A 1S6, Canada
Phone: (604) 291-3566 Fax: 604-291-3040
Email: stever@sfu.ca

Membership Committee Chairperson
Julianne Abendroth-Smith
Willamette University
Department of Exercise Science
Lestle J. Sparks Center
Salem, OR 97301
Phone: (503) 370-6423 Fax: (503) 370-6379
Email: jabendro@willamette.edu

Meeting Chairpersons
Danny Pincivero/Vijay Goel
The University of Toledo
Departments of Kinesiology and Bioengineering
Toledo, OH 43606-3390
Pincivero Phone: (419) 530-5291 Fax: (419) 530-4759
Goel Phone: (419) 530-8030 Fax: (419) 530-8076
Email: danny.pincivero@utoledo.edu/vijay.goel@utoledo.edu

Education Committee Chairperson
Steven McCaw
Illinois State University
School of Kinesiology and Recreation
5120 Illinois State University
Normal, IL 61790
Phone: (309) 438-3804 Fax: (309) 438-5559
Email:smccaw@ilstu.edu

Communications Committee Chairperson
Gary Heise
University of Northern Colorado
School of Kinesiology and Physical Education
2790 Gunter Hall
Greeley, CO 80639
Phone: (970) 351-1738 Fax: (970) 351-1762
Email: gary.heise@unco.edu

Newsletter Editor
Don Anderson
University of Iowa
Department of Orthopaedic Surgery
2182 Westlawn
Iowa City, IA 52242-1100
Phone: (319) 335-8135 Fax: (319) 335-7530
Email: don-anderson@uiowa.edu

Student Representative
Max Kurz
University of Nebraska–Omaha
HPER Biomechanics Laboratory
School of HPER
Omaha, Nebraska 68182-0216
Phone: (402) 554-2670 Fax: (402) 554-3693
Email: mkurz@mail.unomaha.edu

From the Secretary/Treasurer

Ted Gross

Hi again from Seattle. The bamboo in our front yard has again sprouted and the new shoots are growing around 3 inches per day. Besides tulips, it is only clear sign of spring that I can see, as the drizzle with intermittent sun breaks continues. With that digression out of the way, onto ASB news…

Membership: This year marked our first attempt at sending dues invoices by e-mail. This approach has saved the society substantial time and money (about 650 invoices are sent out each year). We have been receiving dues at a similar rate than in previous years. As of last week, 476 members had renewed for 2003 (in 2002, ASB had approximately 500 regular members and 100 student members). We did find that the e-mail address for approximately 50 members were not active and are working to reach those folks by regular mail. Please make sure your e-mail address is updated in the database, as that has become our primary means of communication with the membership.

Journal Subscriptions: Our total number of journal subscriptions has been greatly reduced during our trial year of voluntary subscription to the Journal of Biomechanics (all of the reduction is associated with the J of Biomechanics as the other journals subscriptions are up slightly). If you have feeling about this policy (either way), I encourage you to contact members of the Executive Board as a decision will soon have to be made whether to maintain this policy. On a positive note, our inquiries regarding membership subscriptions with Elsevier have had a much improved turn around time.

Finances: At the conclusion of 2002, total ASB society funds stood at $110,928. This total represents stabilization at a level comparable to that of 2000 and hopefully reflects the beginnings of a recovery of our investments from the bear market of the last few years. Our annual operating budget remains just under $40,000 per year, with approximately 45% of that amount targeted to support Annual Meeting Awards, Student Travel Awards, Grants-in-Aid, and sponsorship of Regional Meetings.

Elections: A quick note regarding the upcoming society elections: we are intending to conduct the election using a web-based platform from a commercial vendor (this will be at minimal cost to the society, less than $100). This represents a continued transition from the previous paper ballots and last year's e-mail election. It is my hope that this web-based platform will be simple and interesting enough to increase our voting turnout (which typically hovers around 50% or so). If we are unable to set up the web-based system this year, the fall back will be an e-mail election. I am highly motivated, however, by the desire to avoid receiving 300+ e-mails within 2 days.

As always, feel free to contact me if you have any questions or comments (tgross@u.washington.edu or 206.341.5604).

Commercial Members

Commercial membership categories are aimed at encouraging affiliation by commercial organizations that market products which are used by the biomechanics research community, or companies that are otherwise engaged in activities that fall within the Society's general interest areas. Based on level of financial support required and upon benefits provided, commercial membership categories in decreasing order are Sustaining Member, Supporting Member, Contributing Member, and Corporate Member. Companies wishing to become a Commercial Member are encouraged to contact either Julianne Abendroth-Smith or Joan Bechtold (page 4) for details.

The ASB Executive Board is pleased to recognize:

CORPORATE MEMBERS

Aircast

DePuy

Orthofix, S.R.L.

Peak Performance Technologies, Inc.

Tekscan, Inc.

All members of the Society are invited to suggest names of potential commercial members. Please send your suggestions to Julianne Abendroth-Smith, Membership Committee Chairperson, at the address indicated on page 4 of this newsletter. If you have a particular contact person at the company, please make sure to include his/her name.

••• *Attention* •••
ASB Members

If you are interested in becoming more active in the Society (e.g., serving on a committee or chairing a conference session), contact Steve McCaw, Education Committee Chair (page 4) with your name, address, phone/fax number, email address, and your desired involvment. This information will be included in a data base which is periodically updated and distributed to the Executive Board.

Thanks!

Communication Committee

Gary Heise

As I write this, abstracts for the 2003 Toledo Annual Meeting are being reviewed. Rodger Kram, the Program Chair, and his committee have a particularly difficult task this year because the number of submissions was near 300. This number represents a 50% increase over the number of abstracts submitted for the 2001 San Diego meeting. In addition to Program Committee work, the local organizing committee headed by Vijay Goel and Danny Pincivero have an equally daunting task as they host what looks to be a very popular meeting.

The electronic submission process was much smoother than the 2001 attempt. I credit the greater ease to familiarity with the process among submitters and tricks learned along the way by me. The Adobe Acrobat PDF format was handled well by all but a few. I suggest we keep the submission process similar for future meetings, but perhaps automate the communication between the Communications Chair and the submitters. I personally answered all e-mails that came in regarding abstract submission, a process that puts the semester on hold for a few days for an academic. Suggestions regarding the submission process are always welcome.

The Communications Chair duties will be turned over to Kathy Simpson of the University of Georgia this year. It's been a pleasure for me to serve in this capacity for the past three years. I rank the ASB Executive Board as the most professional and personable group of individuals I have worked with in my dozen or so years of "committee-sitting" in various capacities.

If you have an interest in working with the Communications Chair, please seek out Kathy or me at the upcoming meeting. We need to form a larger Communications Committee to help the Chair with website maintenance responsibilities and annual meeting chores. Thanks for all the input from the membership over the years. As always, feel free to submit any comments about the website to me.

I look forward to seeing you at Toledo.

Graduate Program Information

The ASB maintains an on-line database of universities and colleges with graduate programs in biomechanics. The database is organized alphabetically by country and state and currently includes more than 70 institutions from Canada, the United Kingdom, and 32 different states within the US. This is a great resource for undergraduate students who may be considering graduate school as well as for anyone who just wants to find out what's going on at other institutions.

Is your institution included in the database? If not, new information can be sent to Gary Heise at University of Northern Colorado via email: gheise@hhs.unco.edu. Because the information contained in these listings may gradually become outdated as equipment and personnel at laboratories change over time, all institutions are encouraged to review and update their information periodically.

New and updated program information can be transmitted directly in an e-mail. Alternatively, an online form can be used to submit updated grad program details.

The graduate program database can be accessed through the Society's internet homepage at:

www.asb-biomech.org

Education Committee

Steve McCaw

As the spring weather improves an unexplainable homesteading instinct takes over my brain. Usually it passes, and I take a son or two out to the driving range. But at other times, I am driven to act handy in some fashion or another, mostly in a way that allows me to pound a few nails. Because I get ambitious plans but have limited skills, I frequently end up pushing the limits of my handyman comfort zone. This spring, I courageously replaced the deteriorated, 25-year-old wooden deck on the back of my house. Tearing the deck down was mildly therapeutic, and framing and constructing the new deck was challenging. The finished product looks great on the important 3 visible surfaces (a major accomplishment in my CV of home projects). A sign outside the tool rental shop reads, "Do something that you will be proud of". My pride in the new deck likely exceeds what the finished product deserves, but my enjoyment of the deck is enhanced in recalling how much learning and new skill application it required. Just don't look under the strategically placed shrub.

What does this preamble have to do with the Education Committee of the ASB? Well, I could solicit input on a biomechanical evaluation of my handyman performance to explain all the residual muscle soreness. The point relates more to the strength of the ASB, and the uniqueness of the ASB annual meeting. We are a very diverse group of scientists, clinicians, technicians, and students. Our research and teaching foci are extremely broad. The annual meeting provides an opportunity to expand our professional comfort zone. The potential for interaction among the varied membership is a valuable part of the ASB annual meeting. We can attend oral and poster presentations beyond our immediate topical interests, attend and participate in tutorials, and talk with ASB colleagues whose work differs from our own. Sharing different perspectives can enrich our work by lending new insight. Take advantage of the opportunity for interaction when you are in Toledo next September for the ASB meeting.

At Toledo's meeting, two tutorials will be offered on the afternoon of Saturday, September 27. Both tutorials are sure to supplement the professional rewards of attending the annual meeting.

Tutorial A) David Hawkins, PhD, of the Human Performance Laboratory and the Exercise Science Graduate Group in the Exercise Biology Program and the Biomedical Engineering Graduate Group, at UC Davis will present a tutorial titled *Ultrasonography: A Non-invasive tool for quantifying muscle-tendon deformation in-vivo*. In Dr. Hawkins' research, ultrasound is used to non-invasively study the behavior of muscle and tendon as they act within the body under various conditions. His ultrasound research demonstrates how the orientation of the fascicles within muscle changes with muscle activation. Visit Dr. Hawkins' web site at http://dahweb.engr.ucdavis.edu/dahweb/dahsite/dahsite.htm for more information on his research program.

Tutorial B) Steve Messier, Ph.D. from the JB Snow Biomechanics Laboratory in the Department of Health and Exercise Science at Wake Forest University will present a tutorial on *Successful grants for young investigators*. The ASB students requested this topic, but it is certain to interest anyone intent on improving the quality of submitted grants. Dr. Messier has been the primary or co-investigator on research awards totaling more than $10,000,000.

Please check the ASB2003 website for details on registering for the tutorials, and other info regarding the conference:

http://www.bioe.eng.utoledo.edu/ASB

Regional Student Meetings: Elsewhere in the newsletter are reports from Dr Mike Feltner on the 2003 Southern California Conference on Biomechanics (SCCB) and from Dr. Danny Pincivero on the 2003 Midwest Graduate Student Biomechanics Symposium (MWGSBS) . Dr. Feltner reports that the conference, sponsored in part by ASB, was a resounding success. If you are interested in developing and/or hosting a student-oriented biomechanics conference in your region, send me a proposal by September 10, 2003. The proposal should be submitted by email for easy distribution for review by others on the ASB Executive Board, and must include a general description of the conference including a detailed budget. My email address is smccaw@ilstu.edu; feel free to contact me to discuss your proposal and budget prior to the official submission date. ASB recognizes the value of these regional conferences and is eager to see more offered around the country; it is expected that ASB will be able to provide financial support for at least one regional conference per year.

If you are interested in serving on the Education Committee, contact me at your convenience. It's easier than building a deck, and is not extremely time-consuming. See you in Toledo.

...*Amidst the Corn*

Don Anderson

Just a few quick words this issue, as the Newsletter is filled with great content this go-round. And rather than expense my rambling to you, the ASB Membership, I'll go light on my ruminations, thereby saving a few pages. Not unlike our legislators in Washington, I guess that I've effectively yielded my space to my learned colleagues from…

Also to note, the "Jobs" column is missing this issue. As we go to press, I still haven't been able to track down Kathy Browder, who has never left me in this spot before. For up to date jobs listings, visit the website of the International Society of Biomechanics at http://www.isbweb.org/jobs/index.html.

Look for more from me next issue. Have a great summer!

In the most recent issue of the ASB Newsletter, we inadvertently omitted a paid advertisement for Skill Technologies and its new SKILL/240 Hz System. In the interest of fostering strong relationships with our corporate partners, we have taken the liberty of mailing this follow-up flyer highlighting Skill's new product on their behalf. Hopefully you will take the time to peruse the flyer, and to consider their new product should it meet your needs. We apologize to both our friends at Skill Technologies and to you, the ASB Newsletter readership for our error.

Don Anderson
ASB Newsletter Editor

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SKILL TECHNOLOGIES, INC.

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Skill Announces "SKILL3D™/240Hz" - A Real-Time, 240Hz, True 3D (6DOF) Motion Capture, Measurement and Analysis System.

PHOENIX, ARIZONA, (28 May, 2003) --- Skill Technologies, Inc. the motion capture, measurement and analysis specialist, today announced a breakthrough in motion analysis technology with the introduction of its revolutionary *SKILL3D/240™* -- (**240Hz** - Samples Per Second Per sensor) electromagnetic motion measurement and analysis (4 & 8 sensor) systems. *SKILL3D/240* is the flagship product of the company and is used for many motion analysis situations and biomechanics research applications!

This advanced *240Hz* motion capture system represents a quantum leap forward in electromagnetic tracking technology. Its most notable feature is its speed of capture! It is now the fastest system on the market with a speed never before thought possible! When combined with *Skill3D™* software, its real-time capabilities, ability to display true 3D motion i.e. its position and rotation (i.e. six degrees-of-freedom) make it the most noteworthy system for the medical biomechanics field and high-speed motion analysis of sports skills, such as golf, baseball and softball swings! Due to its real-time ability, an ingenious feature called biofeedback (audio and visual) is introduced to the sports training and medical rehabilitation fields. Audible sounds may be keyed to particular movements. When a subject moves outside of the specified range – it beeps at you! Helping the student learn a new skill quickly and effectively. This feature may be used to help patients recover faster during rehabilitation after an injury.

Substantial technical advances have occurred in the manufacture of the electromagnetic tracking device being used that now make it the 'equipment-of-choice'. Not only its increase in speed of capture but its ability to capture samples from all sensors simultaneously. Improved distortion sensing ability, resolution, stability and a USB interface provides for increased operational range, better accuracy, and for an easy upgrade path. All these attributes clearly position Skill Technologies, Inc. as the leader in the motion analysis field, offering significant improvements over competitive systems! … and offering significant benefits to motion analysts, biomechanics researchers, sports performance analysts, motor behavior researchers, as well as clinicians …. at a fraction of the cost!

Please contact us for more information at Tel: (602) 277-7678, email: skill@skilltechnolgies.com or visit our web site: www.skilltechnologies.com.

Program Committee

Rodger Kram

Over 300 abstracts were submitted for our annual meeting to be held in Toledo, Ohio September 25-27. That number appears to be an ASB record and, it sure is keeping me busy getting them reviewed in a timely manner! The meeting promises to be high quality as well.

An impressive array of keynote speakers will kick off each morning of the meeting. Thursday, Dr. Vik J. Kapoor, Professor of Bioengineering, Electrical Engineering and Computer Science at the University of Toledo will present "Bio-Electronics Nanotechnology for the Brain". Friday, Dr. Michael Dickinson, Professor of Bioengineering and Biology at the California Institute of Technology will present, "How flies fly".

Two symposia are already organized. Thursday will feature "A Perfectionist Looks At Sports Techniques; A Tribute To Jim Hay". Speakers include Drs. Jesús Dapena, Richard Hinrichs, Barry Wilson and Toshi Yanai. On Saturday, one symposium will be entitled "Modern Perspectives on the Six Determinants of Gait". Drs. Dudley Childress, Casey Kerrigan, Claire Farley and Art Kuo will all give their own unique perspective. This symposium coincides with the 50th anniversary of the classic publication by Saunders et al. in 1953. Expect to see the dogma under attack.

To accommodate the many fine submissions, poster sessions will be an even more important venue as there is simply not enough time to accommodate even half of the submitted abstracts as podium presentations. Note that there will be a special President's award for the best poster.

Saturday afternoon will feature many diverse scientific activities including laboratory tours and tutorials. Please see the article in this newsletter by Steve McGaw (Education Chair) which details the tutorial sessions.

Early registration deadline is August 1, 2003. Attendees should also pay close attention to booking their accommodations by August 27, 2003. After this date, the hotels will be releasing the blocked rooms, and reservations cannot be guaranteed after this date. For more information, consult the web site:http://www.bioe.eng.utoledo.edu/asb/ or the ASB home page.

Students' Corner

Max Kurz

I hope everyone had a productive and successful spring semester. The annual ASB meeting is quickly approaching. As expected, this year's meeting in Toledo will be a rewarding experience for students. There has been an overwhelming interest in this year's meeting. It appears that the Toledo meeting will be the largest in ASB's history. You can be guaranteed that the meeting will be exceptional and will cover many of the disciplines of interest to students and professional members. Additionally, the Executive Board is putting together a tutorial for grant writing and funding for students. This tutorial will be held on the last day of the meeting. Please take advantage of this unique opportunity and make your travel arrangements accordingly. As usual, a student luncheon will be held at the meeting where you will be able to socialize with other students and meet some of the top researchers in our field. This will give you an opportunity to develop new collaborations and to find out what ingredients are necessary to become a successful researcher. I want to encourage all of you to take advantage of what ASB has to offer students and make every effort to attend this year's meeting.

ASB is committed to supporting its student members. Once again several student travel awards of $250 each are available to offset your cost for travel to this year's meeting. To apply for the travel award, student members must submit: (a) "Letter of Purpose" (approximately one page) which states the need for funding, reasons for attending the annual meeting, and an overview of his/her area of study; and (b) a letter from the student's advisor stating the lack of other (travel) funding sources. Preference will be given to students who are an author of an abstract being presented at the meeting. All applications should be sent to the Awards Committee Chair, Dr. Andy Biewener. See page 4 for further details.

The student representative's position will be available beginning in September for the 2003-2004 term. The successful candidate will be chosen during the student luncheon at Toledo. Please consider running for this position. The major responsibility of the position is to act as a messenger between the students and the Executive Board. This position provides the student with a great opportunity to see the inner workings of our society and to make a direct impact on our biomechanics community. The student representative participates in a midyear meeting that is typically held at a nice location. This year we met in Boulder, Colorado. Additionally, the student representative is allocated $500 to offset the cost of the trip to the next ASB meeting in Portland, Oregon. You must be a current or pending student member and attend the ASB meeting in Toledo to be a viable candidate. If you are interested in this position, please contact me via email (mkurz@mail.unomaha.edu) prior to the meeting for more details.

See you in Toledo.

ASB2003: ANNUAL MEETING OF THE AMERICAN SOCIETY OF BIOMECHANICS

The University of Toledo
September 25-27, 2003

Organizers:

- College of Engineering (Departments of Bioengineering, and Mechanical, Industrial and Manufacturing Engineering) and the College of Health and Human Services (Department of Kinesiology)
- Medical College of Ohio (Department of Orthopedic Surgery, and Graduate College)

Early registration deadline: August 1, 2003

For further details, please visit: www.bioe.eng.utoledo.edu/ASB

Meeting Chair: **Vijay K. Goel, Ph.D., Chair and Professor, (vijay.goel@utoledo.edu)**
Department of Bioengineering, The University of Toledo
Director, Spine Research Center, Medical College of Ohio

Co-chair: **Danny M. Pincivero, Ph.D., (danny.pincivero@utoledo.edu)**
Department of Kinesiology, The University of Toledo

Program Chair: **Rodger Kram, Ph.D., (rodger.kram@colorado.edu)**
University of Colorado, Boulder

Sponsors and exhibitors: American Society of Biomechanics, The University of Toledo (College of Engineering, College of Health and Human Services, Division of Sponsored Research), Medical College of Ohio (Department of Orthopedics, Graduate College), Spine Research Center, Human Performance and Fatigue Laboratory, Prsrodhi Clinic, Bioconcepts.

Book Review

Rodger Kram

Principles of Animal Locomotion

by R. McNeill Alexander
published by Princeton University Press (2003)

Birds do it, bees do it, even educated fleas do it. No, not that. We're talking locomotion. And indeed, this book is steeped with examples from a wide diversity of species including birds, bees and fleas. However, this book is also valuable to scientists who only study human locomotion. Not because it is a handbook on human locomotion, but because it makes it clear what an unusual bipedal, plantigrade, heavy legged, erect species we are.

The book has five basic parts: general introductory stuff, legged locomotion on land, flight, aquatic locomotion and a diverse assortment of unusual modes of locomotion that you never realized existed. The introductory material is not elementary or trivial. The opening chapter on evolution will surely surprise many engineers who think of evolution as an optimizing process. The chapter on muscle leads the reader to seek out the more comprehensive tomes like Tom McMahon's or Roger Woledge's books. The chapter on the importance of body size and scaling introduces the reader to Knut Schmidt Nielsen's book devoted to that topic. The chapter on methodology reflects Alexander's affection for experiments that need minimal equipment; most ASB members are more technophiles. I found that chapter too thin and a bit outdated.

The walking and running chapters are quite in depth and logically organized. This reflects Alexander's own specialization in legged locomotion. One thing that struck me from this overview was what a hodge-podge collection of species we have studied. Yet, from a bizarre mix (cockroaches to ostriches to giraffes) have come some clear general principles, that fortunately also apply to humans. The field of comparative locomotion biomechanics really does not have "white rat" model systems. I'm not sure if that is good or bad.

The flight chapters give a good overview that could lead the interested reader into the much more challenging books on insect and bird flight. I welcomed this approach because the more specialized articles often dive immediately into hotly debated details that leave the novice (i.e. me) feeling out of it. The aquatic chapters fill an important void. I am not aware of any other book that considers all the forms of locomotion: on top of, at the surface of, and under the water. Again, the reader is directed to specialized books on for example, fish locomotion.

I liked the overall structure of the book. Ideas are introduced qualitatively, then quantitatively with a judicious number of equations. The book is replete with excellent references. Thus, a reader who, for example, has a curiosity about whales can get an overview in this tome but then head to the library with some key leads. However, unless you have recently had an in depth exposure to zoology, keep a dictionary handy. Terms like "siphonophore" are dropped casually in to the text. Alexander ends each chapter with and devotes the final chapter to his suggestions for future study and challenges for the next generation of biomechanists. Young people in particular can benefit from the wisdom that Pro. Alexander has amassed. Yet, I wish that these sections were more extensive. His brief comments are a bit Yoda-like.

Even the most well read scientist would benefit from the synthetic sections, where Alexander looks for commonality between modes of locomotion. The driving principle of minimizing metabolic cost of locomotion is one example. In a field with many papers full of equations and details it is refreshing to have a maestro point out the forest rather than the trees. Throughout, I enjoyed seeing how Alexander outlined "theories in collision." That includes theories colliding with each other and theories colliding with actual data that contradict theory. In a quote that may epitomize the scientific career of Alexander, he states, "We cannot expect…these models to be accurate for real animals. The value of the calculations is that they reveal general principles that might be obscured by the complexity of more realistic models."

So, take your choice: encyclopedic, tour de force, opus magnum. Unlike my last book review, this is no lemonade sipping, hammock lying afternoon read. But don't let that turn you off. If you still have some of the curiosity of a child then you will want to learn how fish swim, or birds fly. In fact, this book might be useful for parents of curious kids. Nowhere else can one find such a clear smorgasbord of topics like how maggots crawl, how geckos stick on the ceiling or how hummingbirds hover. Allow yourself a block of time to digest this book a chapter at a time. Better yet, organize a graduate seminar (maybe with a biology department colleague) and spend a class session on each chapter with students reading the key papers mentioned.

Reading this book was a humbling experience. I realized that not only is there no other single person on the planet who could have written this book, there is probably no university department that could have written such a comprehensive book. If you want quantitative support for that idea, references to Alexander's first author papers comprise a full three pages in the bibliography of this book. I believe that Prof. Alexander was a student of Sir James Gray who wrote his classic *How Animals Move* in 1968. Comparing that book to *Principles of Animal Locomotion* makes it clear how much progress the field has made in the ensuing 30+ years.

2003 SCCB

Michael Feltner

The 2003 Southern California Conference on Biomechanics (SCCB) was held March 28–29, 2003 at Pepperdine University. 114 individuals attended the conference and heard eighteen presentations by undergraduate and graduate students representing nine laboratories from eight universities. Anna L. Jacobsen from Pepperdine University received the outstanding undergraduate student presentation award for her research, "Plant biomechanics, safety, and efficiency in twenty-two species of chaparral shrubs." Samuel R. Ward from the Musculoskeletal Biomechanics Research Laboratory at the University of Southern California received the award for the outstanding graduate student presentation for his research, "Comparison of patellofemoral alignment and contact area in persons with and without patella alta".

In addition to the student presentations, the conference was highlighted by two keynote addresses. On March 28, Dr. Christopher M. Powers from the Musculoskeletal Biomechanics Research Laboratory at the University of Southern California presented the SCCB Keynote Address, "The use of biomechanical modeling to characterize patients with patellofemoral pain." On March 29, former ASB President, Dr. Robert Gregor from the School of Applied Physiology at Georgia Tech University gave the ASB Keynote Address, "Cycling biomechanics: Applications in musculoskeletal mechanics and neural control."

The abstracts from the student presentations can be read at the conference web site: http://faculty.pepperdine.edu/mfeltner/sccb.

On behalf of the organizing and program committee members for the SCCB, we thank the ASB for its generous support of regional student conferences.

Michael Feltner, Ph.D.
Department of Sports Medicine
Pepperdine University
michael.feltner@pepperdine.edu

We Need Your Contribution

Members are encouraged to contribute to the newsletter. A note, a letter to the editor, a lead on an interesting story, information about a scientific meeting, in fact anything of interest to the ASB membership would be most welcome. Send information scrawled in longhand, via e-mail, or on computer diskette for PC or Macintosh. If you have any other ideas, please get in touch. The next newsletter will be published in December 2003. **Deadline for submission of materials is 18October 2003!**

2003 MWGSBS

Danny Pincivero

The 2003 Midwest Graduate Student Biomechanics Symposium (MWGSBS) was hosted by the Department of Kinesiology at The University of Toledo April 4–5. Approximately 40 attendees were host to a number of very impressive presentations by 3 keynote speakers and 13 students.

The keynote presentation on Friday afternoon was given by Dr. Vijay Goel, Professor and Chair of the Department of Bioengineering at The University of Toledo. Titled "Biomechanics of spinal succession," Dr. Goel's presentation was a wonderful and inspiring mix of his personal growth in the study of Biomechanics and his cutting-edge research on spinal mechanics. The second day of the symposium began with a keynote lecture by Dr. Jim Potvin (Faculty of Human Kinetics, University of Windsor) titled "Reducing the risk of workplace injuries through ergonomics research". Dr. Potvin's presentation detailed the complexities of conducting research on postural body mechanics on the job-site in the automotive industry, while highlighting the important functional outcomes of such research. The afternoon keynote lecture, titled "What your mom did not tell you about vaginal birth", was provided by Dr. James Ashton-Miller (Department of Biomedical Engineering, University of Michigan). Dr. Ashton-Miller's presented a very insightful and informative point of view regarding childbirth and the prevalence of birth-related injuries to the mother, through detailed 3-d reconstructions of the pelvic floor.

The student presentations were no less impressive and involved a wide-range of topics ranging from kinematic analyses in older adults to finite element modeling and neural networking.

Overall, the 2003 MWGSBS was a success due mainly to the efforts of the keynote speakers and student presenters, as well as to the logistical preparations by graduate students in the Department of Kinesiology at The University of Toledo. The local organizing committee of ASB2003, to be held on the campus of The University of Toledo in September, feels fortunate to have run through this "warm-up" in conference preparation. Due to the efforts of Rodger Kram, the scientific program of ASB2003 looks to be shaping up to be a "can't miss" conference in 2003.

We look forward to hosting your visit this September to The University of Toledo.

Danny Pincivero, Ph.D.
Department of Kinesiology
The University of Toledo
danny.pincivero@utoledo.edu

NOMINATIONS FOR OFFICE IN THE ASB

Below and on the following page, you will find biographical sketches provided by the candidates nominated to run for the offices of President-elect, Program Chair-elect and Secretary-Treasurer-Elect. The nominating committee chaired by Andrew Biewener has provided an outstanding set of candidates. The nominees are:

President-elect - Mark Redfern and J.J. (Trey) Crisco

Program Chair-elect - Art Kuo and Charles Turner

Secretary-Treasurer-elect - Don Anderson and David Fyhrie

Please consider these sketches carefully as you vote. It is very important that the membership of our society take an active role in determining who will fill these positions. In early June, you should receive voting instructions by e-mail. Please remember to **VOTE AT THAT TIME** . We will announce the results at the annual meeting in Toledo. If you do not receive an e-mail, please contact Ted Gross (contact information on page 4).

—— PRESIDENT-ELECT CANDIDATES ——

Mark S. Redfern, Ph.D.

Mark S. Redfern is Professor and Vice-Chairman of the Department of Bioengineering at the University of Pittsburgh. He has appointments in Schools of Engineering, Medicine and Rehabilitation Science. He is also Director of the Human Movement and Balance Laboratories. He received his Ph.D. degree in Bioengineering from the University of Michigan in 1988. His graduate work focused on occupational biomechanics and electromyographic modeling. Previous to his graduate education, he trained and worked as a certified prosthetist, with clinical responsibilities in upper and lower extremity amputee care.

Dr. Redfern's current research focuses on human postural control, fall prevention in the elderly, and occupational biomechanics. He has over 60 peer review publications and 18 book chapters. He currently serves as a member of an NIH Study Section and is an *ad hoc* reviewer for other research funding agencies in the US and Canada. He has been a reviewer for numerous biomechanics and movement related journals, including: *Journal of Biomechanics, Journal of Biomechanical Engineering, Gait & Posture, and the Journal of Applied Biomechanics.*

Dr. Redfern has been active in the ASB since joining as a student member over 17 years ago. He has served on the membership committee and currently serves as the GIA Committee Chairman. His interest in running for President of the ASB stems from his commitment to the field of biomechanics and the education and development of students interested in this area. As the field becomes more interdisciplinary, forums for interactions among disciplines are increasingly important. If elected, Dr. Redfern will continue to foster the collegial nature of the Society, bringing together those interested in the field from the molecular level to whole body biomechanics. In addition, he will continue to foster the interactions of basic and applied researchers in the field.

J.J. Trey Crisco, Ph.D.

J.J. Trey Crisco has been an active member of the American Society of Biomechanics since 1987 when he was a graduate student, attending and presenting over twenty abstracts at the annual meetings. In 1996, he was a member of the ASB Nominations Committee. From 1995 through 1998, he chaired the ASB Membership Committee and helped to redefine the criteria for membership. In 2000, he served as the Program Chair for the 24th Annual Meeting in Chicago, IL. That meeting's theme; "The Biomechanics of Bacteria, Brontosauruses, and Beyond" reflects the diversity of the Society's membership and interests. If elected, Dr. Crisco will work to enhance the Society's strength reflected in this unique ability to bring together a wide range of scientists. Central to this would be further support for student research and education across the diverse fields of biomechanics.

Dr. Crisco received his B.A. in Mathematics and Fine Arts from Amherst College and his Ph.D. in Applied Mechanics from Yale University in 1989. He served on the faculty in the Department of Orthopaedics and the Department of Engineering at Yale University from 1990-1995. In 1995, he joined the faculty at Rhode Island Hospital and Brown University. He is currently the Director of the Bioengineering Laboratory, an Associate Professor of Orthopaedics, and an Adjunct Associate Professor of Engineering at Brown University. He was appointed the Director of Research for the National Operating Committee on Standards for Athletic Equipment (NOCSAE) in 1993 and has developed a funding program for investigators in the area of sports injury mechanisms and prevention. In 1993, he received the Cabaud Memorial Award from the American Orthopaedic Society for Sports Medicine. He is an Associate Editor of the Journal of Applied Biomechanics, an Editorial Consultant for Journal of Biomechanics, and is an ad-hoc reviewer for numerous other journals. He is a member of the Medical and Safety Advisory Committee for USA Baseball and US Lacrosse.

(*continued on page 13)*

Dr. Crisco's earliest work was on spinal biomechanics. His interest in soft tissue injury began with work on muscle contusions, which received the ASB Postdoctoral Young Scientist Award in 1993. His more recent interests include the use of advanced imaging modalities in the study of *in vivo* joint mechanics and soft tissue injury mechanisms. His work has been supported by the Whitaker Foundation and the NIH and has resulted in over seventy peer-reviewed manuscripts and one hundred abstracts.

—— PROGRAM CHAIR-ELECT CANDIDATES ——

Art Kuo Ph.D.

Art Kuo received his Ph.D. in Mechanical Engineering from Stanford University. His undergraduate degree is from University of Illinois, in Electrical Engineering. He received post-doctoral training at the Dow Neurological Sciences Institute in Portland, Oregon. In 1994, he joined the Departments of Mechanical Engineering and Biomedical Engineering at the University of Michigan, where he is now Associate Professor. His research interests are the application of dynamics and control systems analysis to biological systems. Recent research topics include the biomechanics and energetics of human walking, and the integration of sensory information for control of balance.

Charles Turner, Ph.D.

Dr. Turner is the Director of Orthopaedic Research and Associate Director for Biomedical Engineering at Indiana University. He received his Ph.D. degree in biomedical engineering from Tulane University in 1987 and joined the department in 1991 after four years with the Osteoporosis Research Center at Creighton University. He has won numerous awards for his research in musculoskeletal biomechanics and bone biology, including grants from the National Institutes of Health and Whitaker Foundation, and the Fuller Albright Award from the American Society for Bone and Mineral Research. In 2002 Dr. Turner was elected as a Fellow of the American Institute of Medical and Biological Engineers.

Dr. Turner's research interests include mechano-transduction, skeletal genetics, and biotechnology. He has served as a consultant in biomechanics and orthopaedic science for the National Institutes of Health, National Science Foundation, Food and Drug Administration, NASA, Canadian Medical Research Council, Swiss National Science Foundation and the Wellcome Trust (England). He has published over 350 scientific papers and abstracts on topics in biomechanics, bone biology, and genetics, and has given over 70 invited presentations on research topics in musculoskeletal biomechanics worldwide.

—— SECRETARY-TREASURER-ELECT CANDIDATES ——

Donald Anderson, Ph.D.

Don Anderson is an Associate Research Engineer in the Orthopaedic Biomechanics Laboratory at the University of Iowa. He joined the ASB in 1988 as a student member. He received his PhD in Mechanical Engineering (with Biomechanics emphasis) from the University of Iowa in 1989 and was awarded the ASB Pre-Doctoral Young Scientist Award in recognition of his graduate research excellence. Don has enjoyed working on the Editorial Board of the ASB Newsletter continuously since 1992, most recently serving the ASB Executive Board as Newsletter Editor since 2000. He has been on the Editorial Board of the Journal of Applied Biomechanics since 2000 and has served as an invited panelist for review of CAREER / Biomedical Engineering Grant applications at the National Science Foundation the past two years. His research interests involve orthopaedic sports medicine and post-traumatic osteoarthritis.

David Fyhrie, Ph.D.

David Fyhrie is the Division Head and Director of Research for the Bone and Joint Center of the Department of Orthopaedic Surgery of Henry Ford Health System in Detroit. He obtained a PhD in Mechanical Engineering from Stanford University in 1986 for a study of bone remodeling around hip replacements, an MS from the same school in 1978 and BSME (honors) from Gonzaga University in 1977. He is a former member of the NIH ORTH Study Section and served as Program Chairman for the ASB for the 1996 meeting in Atlanta. He is currently an Associate Technical Editor of the Journal of Biomechanical Engineering of the ASME and is on the Editorial Consultants Panel of the Journal of Biomechanics. He has over fifty peer-reviewed publications and has maintained NIH funding continuously for twelve years.

Calendar of Events

Andrew Karduna

2003 Summer Bioengineering Conference
June 25–29, 2003, Key Biscayne, Florida
Abstract deadline – past
www.asme.org/divisions/bed/events/summer03.html

Congress of the International Society of Biomechanics
July 6–12, 2003, Dunedin, New Zealand
Abstract deadline – past
www.isb2003.otago.ac.nz

Progress in Motor Control IV
August 20–23, 2003, Caen, France
Abstract deadline – past
www.pmciv.unicaen.fr

World Congress on Medical Physics and Biomedical Engineering
August 24–29, 2003, Sydney, Australia
Abstract deadline – past
www.wc2003.org

Annual Meeting of the European Society for Movement Analysis in Adults and Children
September 10–13, 2003, Davis, CA
Abstract deadline – past
www.mcocongres.com/esmac2003

Annual International Conference of the IEEE Engineering and Medicine in Biology Society
September 17–21, 2003, Cancun, Mexico
Abstract deadline – past
itzamna.uam.mx/cancun

International Workshop on Virtual Rehabilitation
September 21–22, 2003, Piscataway, NJ
Abstract deadline – past
www.iwvr.org

Annual Meeting of the American Society of Biomechanics

September 25-27, 2003, Toledo, OH
Abstract deadline – past
www.bioe.eng.utoledo.edu/asb

Meeting of the Human Factors and Ergonomics Society
October 13–17, 2003, Denver, Colorado
Abstract deadline – past
hfes.org

IOC Olympic World Congress on Sport Sciences
October 7-11, 2003, Athens, Greece
Abstract deadline - past
www.iocworldcongress.com

ASME International Mechanical Engineering Congress and RD&D Exposition
November 15–21 2003, Washington, DC
Abstract deadline – past
www.asmeconferences.org/Congress03

International Conference on Mechanics in Medicine and Biology
November 12–15, 2003, Tainan, Taiwan
Abstract deadline - past
www.ncku.edu.tw/~ICMMB

Annual Meeting of the Orthopaedic Research Society
March 7–10, 2004, San Francisco, CA
Abstract deadline - July 14, 2003
www.ors.org

International Symposium on the 3-D Analysis of Human Movement
March 31–April 2, 2004, Tampa, Florida
pe.usf.edu/isb3d/

Meeting of the American College of Sports Medicine
June 2–5, 2004, Indianapolis, IN
www.acsm.org

Conference of the International Shoulder Group
August, 2004, Lisbon, Portugal
www.internationalshouldergroup.org

Pre-Olympic Congress: Sport Science Through the Ages
August 6–11, 2004, Thessaloniki, Greece
Abstract deadline – November, 2003
www.preolympic2004.com

5th Conference on Engineering of Sport
September 13–16, 2004, Davis, CA
conferences.ucdavis.edu/sportengr

International Symposium on Biomechanics in Sports
Summer, 2004, Ottawa, Canada

NOTE: For a more comprehensive international listing, please visit ISB's website at: www.isbweb.org/conferences